

# NASA Glenn Safety Manual

## CHAPTER 17 - CONSTRUCTION SAFETY

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### 17.1 SCOPE

This chapter describes policies and minimal safety and health requirements for all construction activities at the NASA Glenn Research Center, which includes the Cleveland Center and Plum Brook Station. It is Center policy that an employee's health and safety is the highest priority. All persons performing construction activities shall ensure that work is performed in a safe and healthful manner. All persons engaged in construction activities shall meet or exceed the minimum safety and health requirements defined herein, and shall comply with all other Federal, State, and local codes and standards where required, including NASA Agency and Center policies and/or procedures.

## 17.2 DEFINITIONS

- a. Construction: Any activity that results in new buildings, structures, and facilities, or modifications to existing buildings, structures, and facilities such as alterations and repairs; routine institutional maintenance; work on utility systems, process piping, facility equipment, and research hardware; and painting or decorating
- b. Prime contractors: Non-NASA individuals, companies, or businesses that are retained by Glenn Research Center to provide specific labor or services
- c. Subcontractors: Non-NASA individuals, companies, or businesses that are retained by the prime contractor to perform any specific labor or services to the prime contractor
- d. Contracting officer: Authorized representative for administering contracts
- e. Contracting Officer's Technical Representative (COTR): Individual designated by the contracting officer to act as his or her authorized representative in administering a contract
- f. Hot-work: Any operation requiring the use of a flame-producing device, an electrically heated tool, or a mechanical tool that can produce sparks or heat to provide an initiation stimulus (see [chapter 28 of the Glenn Safety Manual](#))
- g. Site-specific Health and Safety Plan (HASP, see appendix B and C): A plan that is developed to identify and ameliorate safety and health hazards at a specific site, such as a construction site (the plan describes hazards that are likely to be encountered and develops procedures to either eliminate or control the hazards (see attached sample template, appendix C))
- h. Work stoppage authority: The authority to immediately stop all work being performed at a job site (usually invoked when a situation of imminent danger exists that could result in serious injury to workers and/or personnel ([see Chapter 24 of the Glenn Safety Manual](#)))
- i. Glenn Safety Office (GSO): Office responsible for implementing the Glenn Safety Program
- j. Environmental Management Office (EMO): Office responsible for implementing the Glenn Environmental Management Program
- k. GSO representatives: Employees, first responders, or support service contractors assigned to the GSO
- l. EMO representatives: Employees or support service contractors assigned to the EMO
- m. GSO Construction Safety Program manager: Individual in the GSO responsible for developing and implementing the Construction Safety Program
- n. Document administrator: Individual in the GSO responsible for record keeping and maintaining documents
- o. GSO construction safety coordinator: Individual in the GSO who tracks and disseminates HASP's and other construction-related information to the appropriate GSO representative
- p. Security Management Office (SMO): Office responsible for implementing the Security Management Program
- q. First responder: Emergency service provider who first responds to emergency or safety issues

- r. Material safety data sheet (MSDS): Mandatory information sheet on each chemical substance used on a site that details hazardous ingredients, flammability, reactivity, precautions, and so on

## **17.3 APPLICABILITY**

The provisions, responsibilities, and requirements as set forth in this chapter apply to all Glenn and Plum Brook employees, all NASA contractors and contractor employees, maintenance organizations, other Government agency employees, visitors, and other organizations who perform construction activities within the confines of the NASA Glenn Research Center and Plum Brook Station. This chapter also applies to supply contracts requiring construction services, including construction activities required for the execution of research and development programs.

## **17.4 AUTHORITY AND RESPONSIBILITIES**

Safety responsibilities for NASA contracts and contractor operations, including maintenance, will be coordinated with the GSO, the contracting officer or Procurement Division, and other organizations as needed. The authority for the procedures, responsibilities, and requirements in this chapter are derived from the following:

- a. NPG 8715.3, NASA Procedures and Guidelines
- b. Glenn Environmental Programs Manual
- c. Glenn Safety Manual (other chapters)
- d. Title 29, Code of Federal Regulations (Occupational Safety and Health Standards)
- e. Title 48, Code of Federal Regulations (Hazardous Materials Identification and Material Safety Data)

## **17.5 REQUIREMENTS**

Construction safety requirements have been established to protect the life, health, and physical well-being of all Glenn Cleveland and Plum Brook employees, NASA contractors and contractor employees, visitors, and others; to ensure the safety of the public from hazards, incidents, and/or operations from construction activities; to prevent contamination of property, supplies, and equipment; and to prevent accidents that might interrupt work, thereby delaying NASA programs and/or negatively affecting NASA property.

The following requirements are set forth:

- a. Each construction contract shall contain provisions that define safety and health requirements with the goal of providing safe and healthful working conditions for all contract employees. Contract employees include, but are not limited to, utility service or repair providers, janitors, pest services employees, vendors, materials suppliers, and maintenance and repair workers.

- b. Each construction contract shall be written to hold contractors accountable for the safety of their employees, their services, and their products (as applicable).
- c. Each construction contract shall contain provisions that define a site health and safety officer who shall be assigned to oversee safety requirements at that particular construction site for NASA Glenn in Cleveland and Plum Brook Station.
- d. All construction personnel, including visitors, shall view the construction video or, at minimum, visitors to Glenn shall receive an orientation or safety pamphlet.
- e. Visitors to Glenn shall receive a safety pamphlet with the required badging activity. Each visitor shall be required to have a Center sponsor. These sponsors shall be responsible for the safety of their visitors.
- f. NASA Glenn Research Center (Cleveland and Plum Brook Station) does not assume the responsibilities of an employer for contractor employees under title 29, Code of Federal Regulations, part 1910. Contractors are responsible for providing a safe and healthful workplace for their employees and subcontractor employees, and ensuring that their work is performed in a safe manner.
- g. All Prime Contractors shall have a written HASP in place. Sub-Contractors shall also have a written HASP in place, or they may work under the Prime Contractor's HASP, if they provide written documentation that they have read and understood the Prime Contractor's HASP and they agree to perform work in accordance with the Prime Contractor's plan, safe work practices, and OSHA regulations.

## **17.6 INSPECTION REQUIREMENTS**

Inspection of construction work areas and audit of safety programs are tools that can be used to identify problems and hazards before these conditions result in accidents or injuries. All GSO and EMO representatives, COTR's, contractors, and others shall comply with the inspection requirements listed below:

- a. Except for maintenance projects lasting one day or less, a daily inspection of the job site shall be conducted by the contractor's health and safety officer (see appendix B for guidance on forms). The COTR and GSO shall be provided with a copy of the results of this "daily walk-through." A copy also shall be maintained at the job site. The purpose of this inspection is to ensure that the site is in a safe condition.
- b. A GSO representative (except GSO first responders) and the COTR, working jointly as a team, shall inspect the contract work site frequently and at random. The inspections are conducted for the purpose of observing, recording, and enforcing compliance with safety and health requirements.
- c. During construction site inspections, the GSO representative uses the construction inspection checklist to document the results of the inspection and the corrective action(s) needed. Within 24 hours the GSO representative submits the inspection report to the Glenn Safety Office, where a copy of the report is entered into a database and other copies are sent to the COTR, GSO construction lead, first

responder lead, the inspector who conducted the inspection, and/or others as required.

- d. If no violations are found at the time of inspection, this shall be indicated in the inspection report.
- e. Violations of safety and health requirements shall be corrected immediately, and if any Imminent Danger Violations are discovered, the GSO representative shall issue a Stop Work Notice. The GSO representative shall inform the COTR that he or she has issued a Stop Work Notice and immediately notify the Glenn Construction Safety Program manager, or, in his absence, the chief of the GSO. At Plum Brook Station, the Plum Brook Management Office (PBMO) safety officer will be notified. A copy of the inspection report shall be submitted to the GSO document administrator.
- f. Due to the nature of their work requirements, GSO first responders shall conduct weekly unannounced construction site inspections. If deemed necessary, they shall also conduct inspections when called to construction sites to conduct burning and welding checks, O<sub>2</sub> checks, etc. GSO first responders also shall use the construction inspection checklist to document the results of the inspection and the corrective action(s) needed. Within 24 hours they shall submit the inspection report to the Glenn Safety Office, where a copy of the report is entered into a database and other copies are sent to the COTR, GSO construction lead, first responder lead, the inspector that conducted the inspection, and/or others as required.
- g. During noninspection periods, and while performing other duties, GSO and/or EMO representatives may observe construction sites to ensure that safety and health regulations are being adhered to. They shall issue a Stop Work Notice for any Imminent Danger Violations and notify the COTR and the Glenn Construction Safety Program manager, or, in his or her absence, the chief of the GSO. At Plum Brook Station, the PBMO safety officer will be notified (Plum Brook Station shall provide a copy of the inspection report to the GSO). The GSO and/or EMO representative shall document the Imminent Danger Violation and the corrective action(s) needed. Within 24 hours he or she shall submit an inspection report to the GSO Division Office, where a copy of the report is entered into a database and other copies are sent to the COTR and GSO construction lead. A copy of the report shall also be submitted to the GSO document administrator.

## **17.7 RESPONSIBILITIES**

### **17.7.1 Construction Contractors, Subcontractors, Maintenance Contractors and Prime Contractors**

Construction contractors, subcontractors, maintenance contractors and prime contractors engaged in construction activities shall meet or exceed the minimum safety and health requirements, and shall comply with all other Federal, State, and local codes and standards where required, including NASA Agency and Center policies and/or

procedures. Where there is any discrepancy in the regulations, the more stringent rule shall apply. In addition, contractors shall

- a. Submit a written site-specific HASP to the COTR before any construction work is performed at the NASA Glenn Cleveland Center and Plum Brook Station (The COTR shall provide a copy of the HASP to the GSO and the EMO for review and approval. Notice to Proceed with construction activities shall not be granted unless the HASP has been approved by both offices.)
- b. Identify in the HASP hazardous operations and chemicals related to the work to be performed (The plan shall also identify in writing the methods and procedures that will be used to ensure a safe and healthful work environment, and how the contractor intends to protect both the health and safety of NASA and contractor employees and government property and equipment. They shall also provide current material safety data sheets (MSDS) for all hazardous materials and chemicals brought onsite. The contractor shall provide a list of the chemicals that will be brought onsite to the Glenn Chemical Management Team for approval (see Environmental Programs Manual). Hazardous Waste Operations and Emergency Response (29 CFR 1910.120) has specific requirements for HASP's.)
- c. Comply with requirements involving the use of lockout and tag out, hand and power tools, barricades, scaffolding, and cranes ([See chapter 20 of the Glenn Safety Manual](#). Comply with requirements covering wall openings, materials handling and rigging, fire protection, hazardous materials, excavation, demolition, waste removal, ladders, and so on.)
- d. Ensure that all contractor employees view the Glenn construction safety video prior to conducting any fieldwork at NASA Glenn Research Center (Cleveland and Plum Brook Station). Documentation must be provided that all employees have viewed the construction safety video within the past 2 years or have been given an orientation on safety policies and procedures. This requirement must be met before a badge will be issued.
- e. Designate, in writing, for each contract, a site health and safety officer and/or safety manager who will ensure compliance with contract safety and health requirements
- f. Designate, in writing, a competent person(s) for each planned operation in compliance with Occupational Safety and Health Administration (OSHA) standards and EPA regulations
- g. Provide a written and/or electronic copy of the contractor's own health and safety plan in addition to the site-specific HASP to the GSO
- h. Perform hazard analysis and safety risk assessment, and submit to the COTR for approval before starting any hazardous deliverable work or support operations
- i. Include, to the extent specified in the contract, safety responsibilities in subcontracts (All prime contractors shall monitor their subcontractors' activities to ensure compliance with all required safety and health regulations. This compliance shall be documented in writing.)
- j. Coordinate with the COTR all operations that involve safe access to hazardous work areas, shutdowns of mechanical and electrical equipment, testing, and interaction between the contractor and NASA operations personnel

- k. Report all accidents, including near misses, to the COTR using NASA Form 1627, and initiate an investigation within 24 hours.
- l. Ensure that an MSDS for each chemical stored at the construction site is located at the site and available upon request (see Environmental Programs Manual)
- m. Provide fire extinguishers and other safety equipment as required, and ensure that employees are trained in its proper use (Upon request, provide documented proof that employees have been trained.)
- n. Develop, to the extent specified in the contract, motivation, awareness, training, and certification programs for their employees in safety matters (This will include regularly scheduled safety meetings for supervisors, foremen, and employees. Document safety-related training in accordance with OSHA requirements and as specified in the contract.)
- o. Report, to the extent specified in the contract, safety data on mishaps, close calls, and lessons learned as required in NASA Procedures and Guidelines (NPG) 8621, "NASA Procedures and Guidelines for Mishap Reporting, Investigating, and Recordkeeping," and in accordance with Glenn and OSHA requirements (Investigation of contractor mishaps will be performed in accordance with investigation procedures as specified in the contractor's safety plan. The contracting officer or the COTR will evaluate and verify implementation of corrective actions.)
- p. Monitor and evaluate, to the extent specified in the contract, the contractor's own activities for compliance with the safety provisions or requirements of the contract (Contractor activities will also be properly monitored and evaluated by NASA officials (or delegated agencies).)
- q. Provide the contracting officer, GSO, EMO, Headquarters Review Teams, and Federal (OSHA) compliance safety and health officers with access to contractor activities and/or operations to determine the adequacy of safety and health measures; Provide access for conducting selected announced and unannounced reviews of contractor operations
- r. Except for maintenance projects lasting one day or less, conduct daily safety inspections of the job site (The COTR and GSO shall be provided a copy of the results of this "daily walk-through." A copy shall also be maintained at the job site. The purpose of this inspection is to ensure that the site is in a safe condition.)
- s. Ensure that all construction signs contain the company name, subcontractor name, and contractor emergency contact, and that the sign is visibly displayed while construction is underway; Remove the sign promptly when the project is completed (Orange construction signs shall contain the company name, subcontractor name, and the NASA COTR with phone number.)
- t. Ensure that all construction sites are barricaded as required (see 17.10, SIGNS, SIGNALS, AND BARRICADES) (Any plans for the layout of temporary construction trailers, temporary structures, or trenching over 5 ft shall be approved by the GSO. Toilet facilities that meet required codes shall also be provided. Drinking water shall be provided in clearly marked containers. The contractor shall ensure that good housekeeping rules are being adhered to.)
- u. In accordance with the Occupational Safety and Health Act of 1970 (P.L. 91-596), provide employees with safe working conditions regardless of where they

are working (It is the contractor's responsibility to submit a timely reply to any OSHA citation that is received. The contractor is also responsible for settling citations issued against the operation unless this issue is specifically addressed in the contract.)

### **17.7.2 NASA Project Manager**

The NASA program and project managers shall:

- a. Coordinate with the GSO and EMO to develop and approve safety requirements and objectives for efforts to be contracted, and advise the contracting officer of any specific safety concerns or issues related to contract performance
- b. Develop safety requirements and objectives that are clearly delineated in the specifications; Provide specific tasks to the contracting officer for incorporation into the contract as required
- c. Recommend appropriate procedures for safe handling of hazards associated with a particular construction project, if standard safety and handling procedures are not known
- d. Ensure with input from the GSO that the proper safety and health specifications for projects are included in the project construction contract (SPECSINTACT)
- e. Participate in the final safety inspection of the work area prior to the completion of the contract and occupancy by personnel
- f. Monitor overall project and provide monthly status report

### **17.7.3 Office of Acquisition**

The contracting officer shall:

- a. Ensure that contractors submit a safety and health plan as part of the contract, and provide a copy to the GSO; Ensure that plan is reviewed prior to contract award
- b. Ensure that the GSO and EMO are actively involved in Glenn procurement actions for construction contracts from pre-award through contract execution
- c. Ensure that all contracts costing \$1 million or more, construction contracts, or contracts involving hazardous operations contain appropriate clauses related to safety
- d. Ensure that safety and health plans for construction procurements are reviewed and approved before giving Notice to Proceed
- e. Coordinate any matters regarding proposed deviations in safety requirements with the chief of the GSO, or his or her designated representative
- f. Establish safety performance, where appropriate, as an element to be evaluated in contracts with fee plans
- g. Require MSDS copies for new hazardous materials upon request by the GSO or EMO (The contractor's hazard analyses and safety risk assessment shall be developed and provided to Glenn for approval before the start of any hazardous deliverable work or support operations, as directed by the contracting officer or the COTR.)



#### **17.7.4 Contracting Officer's Technical Representative**

The COTR shall:

- a. Provide oversight for construction activities, and ensure that construction contractors comply with all safety and health requirements
- b. Implement contractual requirements such as processing Change Orders, Requests For Proposals (RFP's), payments, and any other procurement documents
- c. Participate in the design process
- d. Ensure that a pre-construction conference is scheduled and conducted and that the results are documented
- e. Conduct regular construction meetings
- f. Provide the GSO and EMO with a copy of the contractor's written site-specific HASP prior to issuance of Notice to Proceed for Field Work
- g. Coordinate with NASA operations personnel all activities involving hazardous work area access, mechanical and electrical equipment shutdowns, and certification or operational testing to ensure safety of construction contractors
- h. Enlist the support of the GSO and EMO in ensuring a safe work place and compliance with the Glenn Hazard Communication Program throughout the performance of the contract
- i. Coordinate and participate in contractor construction site inspections
- j. Arrange for final safety inspections of the completed work areas prior to occupancy
- k. Upon request, provide a copy of the contractor's daily inspection report to the GSO
- l. Ensure that when significant changes to contracts occur, or when contracts are combined, safety requirements are also addressed

#### **17.7.5 GSO Representative**

The GSO representative shall:

- a. Participate in all pre-construction activities, including 30-, 50- and 90-percent reviews
- b. Perform construction safety compliance oversight for all construction activities planned or performed at NASA Glenn and Plum Brook Station, including maintenance tasks by subcontractors
- c. Review safety specifications of the C-8095 for incorporation into the construction contract. Inclusion should be completed within 3 to 5 days
- d. Review and approve or disapprove contractor HASP's for proposed onsite construction activities (within 7 days); Approve or disapprove HASP's for maintenance and emergency repairs in a timely manner
- e. Contact COTR when conducting random, frequent inspections of construction sites (excluding inspections by first responders) (Inspection reports shall be prepared and disseminated within 24 hours after the inspection.)
- f. Participate in the COTR's final safety inspection of the work area

- g. Provide technical advice on matters involving construction safety
- h. Participate in the development of safety tasks and requirements in conjunction with program officials
- i. Participate in onsite visits and pre-bid conferences to ensure that potential bidders understand safety provisions
- j. Assist the contracting officer in evaluating the performance and safety record of prospective contractors
- k. Assist the contracting officer as appropriate to apply any special safety provisions to grants or cooperative agreements

#### **17.7.6 GSO Construction Safety Program Manager**

The GSO Construction Safety Program manager shall:

- a. Provide oversight for the Glenn Construction Safety Program
- b. Serve as GSO liaison with the Facilities and Test Engineering Division (FTED), the Test Installations Division (TID), and other organizations as required
- c. Coordinate monthly status meetings with the Construction Management Branch to discuss current or planned construction activities
- d. Conduct random audits of the construction inspection program
- e. Resolve safety issues between the GSO, FTED, contractors, and others
- f. Exercise stop work authority, if necessary
- g. Participate in construction site inspections as required
- h. Provide technical expertise to FTED, the GSO, and other organizations on issues related to construction safety

#### **17.7.7 Glenn Safety Officer**

The Glenn safety officer shall:

- a. Implement safety policies formulated by the Executive Safety Board and perform those safety functions required by the Glenn Safety Manual
- b. Monitor contractor activities onsite through safety staff to ensure compliance with all applicable safety standards and regulations
- c. Approve or disapprove HASP's, Confined Space and Safety Permits, etc., when required
- d. Provide concurrence on work stoppages
- e. Present to the Executive Safety Board an annual construction safety inspection summary
- f. Coordinate any matters regarding proposed deviations to safety requirements with the contracting officer

#### **17.7.8 The Environmental Management Office**

The EMO shall:

- a. Review and approve or disapprove HASP's for proposed construction activities when required
- b. Participate in construction inspections when required
- c. Exercise stop work authority, if necessary
- d. Provide technical expertise to FTED, the GSO, and other organizations on issues related to construction safety

#### **17.7.9 Building Manager**

The building manager shall:

- a. Serve as the point of contact in the building between occupants and outside organizations; Provide pertinent information related to building activities, locations of rooms and personnel, etc.
- b. Serve as the point of contact for area clearance work that affects the building; Notify building occupants of outages (electric, construction activities, water, steam, chilled water, sewer, etc.)
- c. Participate in safety and health inspections

#### **17.7.10 GSO Construction Safety Coordinator**

The GSO construction safety coordinator shall:

- a. Track and disseminate HASP's and other construction-related information to the appropriate GSO representative
- b. Coordinate all pre-construction meetings and HASP's between the FTED, the GSO, TID, and other organizations
- c. Maintain a log for pre-construction meetings and for HASP's assigned to the GSO staff

#### **17.7.11 GSO Document Administrator**

The document administrator shall:

- a. Ensure that all construction related documents are maintained and stored in accordance with GSO requirements

#### **17.7.12 Security Management Office**

The Security Management Office shall:

- a. Ensure that NASA contractors and contractor employees, other Government agency employees, visitors, and other organizations that perform construction activities within the confines of the NASA Glenn Research Center and Plum Brook Station are properly badged

## 17.8 EMERGENCY RESPONSE PROCEDURES

Emergency assistance is available at GRC 24 hours a day, 7 days a week. In the event of fires, explosions, chemical spills, illness, injuries, or other emergencies, dial 911 from any internal GRC telephone. A GRC dispatcher will answer your call and dispatch the appropriate personnel and/or equipment. If you do not have access to a GRC telephone, you may call (216) 433-8888 from pay phones, cell phones, etc.

If an emergency occurs, be prepared to relay the following information to the GRC dispatcher:

- a. Location of the emergency
- b. Nature of the emergency (fire, medical, chemical, etc.)
- c. Number of persons injured

Remain on the line with the dispatcher until he or she releases you. For nonemergency response, dial (216) 433-2088.

## 17.9 ACCIDENT INVESTIGATION

- a. A NASA Mishap Report (NASA Form 1627) shall be completed if an employee required hospital and/or emergency medical aid, equipment was damaged, or a near miss occurred; the report shall be submitted to the Glenn Safety Office within 24 hours. Contractors must submit the form to their COTR who in turn submits it to the GSO within 24 hours. Supervisors of Government employees are also responsible for submission of the form to the GSO within 24 hours.
- b. An accident investigation shall be initiated as required.
- c. If a mishap occurs at a construction site, the GSO representative who responds to the area shall also notify the appropriate COTR. If an FTED contractor is involved, then the FTED point of contact for construction safety shall be notified.

## 17.10 SIGNS, SIGNALS, AND BARRICADES

- a. All construction sites shall be barricaded as required. Metal fencing is preferred around large sites to keep unauthorized personnel out. Other physical barricades that can withstand 200 lb of force shall be used. **Orange cones or yellow caution tape are not considered adequate barriers unless they are reviewed and approved by the GSO.**
- b. Everyone shall obey all traffic rules and regulations.
- c. No one shall violate construction signs warning of danger, hazards, etc.

## **17.11 EMPLOYEE TRAINING (CIVIL SERVANT AND CONTRACTOR)**

- a. All employees shall be trained in emergency procedures, including emergency plans, routes, assembly locations, and how to summon help utilizing the emergency notification telephone numbers and/or systems.
- b. All employees shall be trained in the recognition and avoidance of unsafe conditions and practices.
- c. All employees shall receive training in hazard communications, blood-borne pathogens, chemical safety training, etc., as required (See the Glenn Environmental Program Manual).
- d. All employees who are required to enter a confined or enclosed space shall be provided with training on the hazards that may be encountered and the required procedures to follow (See the Glenn Environmental Program Manual).
- e. All employees shall be trained in the proper use of fire extinguishers if required to use them.
- f. All employees shall be trained in safety requirements for excavations and trenches, and proper shoring techniques.
- g. Scaffolding shall not be erected, moved, dismantled, or altered except under the supervision of a trained, competent person.
- h. All employees exposed to fall hazards shall be trained in fall protection.
- i. All employees who are responsible for rigging any equipment for lifting shall be properly trained.
- j. Only trained, certified personnel are allowed to operate cranes or other lifting equipment (see chapter 20 of the Glenn Safety Manual).
- k. Site-specific safety orientation training shall be given to all new employees.
- l. All employees shall receive training on the requirements of the site-specific HASP.

## **17.12 PRECONSTRUCTION**

- a. A pre-construction conference shall be held prior to the initiation of fieldwork. The appropriate building managers and personnel from the GSO, the EMO, and the Security Management Office shall participate in the meeting; they shall be notified at least 1 week prior to the scheduled date.
- b. All construction personnel, including visitors, shall view the NASA Glenn or Plum Brook Station construction video, or at a minimum, visitors shall receive an orientation or safety pamphlet. \_

## **17.13 GRANTS**

Grant employees must also adhere to Glenn safety requirements. A “special safety condition” addressing safety should be included in all grants and cooperative agreements when research conditions require construction activities on specific GRC facilities, the

use of Government-furnished equipment (GFE), or the use of hazardous or energetic materials or chemicals that pose a significant safety or health risk. Program offices that select research projects with possible safety issues shall identify the need for a special safety condition to be included in the grant or cooperative agreement award document. The special condition shall include the provision that all applicable Federal, State, and local codes and standards shall be followed, including NASA Agency and Glenn policies and/or procedures. Before commencing work, the Grantee shall submit a hazardous assessment to the GSO based upon the perceived risks. A HASP shall be developed and approved by the GSO prior to conducting research activities. Research grants also require the same mishap reporting and investigating requirements as any other contract.

## **APPENDIX A - BIBLIOGRAPHY**

- Glenn Hazard Communication Policy and Requirements
- NASA Safety Policy and Requirements Document
- Chapter 2, Safety Requirements for NASA Contracts and Contractor Operations
- Chapter 8, Facility Acquisition Safety and Construction Safety
- NASA Management Instruction (NMI) 8621.1, as revised
- Mishap Reporting and Investigating NPG 8621.
- Ohio Administrative Code (OAC) 4121-1, Ohio Administrative Code Administrative Procedures, Industrial Commission of Ohio
- OAC 4121-2, Ohio Administrative Code Standards of Practice for Representative Claimants or Employers, Industrial Commission of Ohio
- OAC 4121-3, Ohio Administrative Code Claims Procedures, Industrial Commission of Ohio
- Title 29, Code of Federal Regulations, Pt. 1910 - Occupational Safety and Health Standard and Pt. 1926 - Safety and Health Regulations for Construction
- Title 48, Code of Federal Regulations
  - Pt. 52, Sec. 223-3 - Hazardous Material Identification and Material Safety Data
  - Pt. 1852, Sec. 223-70 et seq - Solicitation Provisions and Contract Clauses, Safety and Health
- Glenn Environmental Programs Manual

## **APPENDIX B - HEALTH AND SAFETY PLAN: A GUIDE TO MINIMUM HEALTH AND SAFETY REQUIREMENTS**

The site-specific Health and Safety Plan (HASP) should contain safety and health information that is directly related to the hazards associated with the planned or required operations of a particular project. All plans shall contain the information shown on the form in appendix C, including but not limited to the following:

## **GENERAL INFORMATION**

- Contract number
- Task number
- Start and finish dates
- Name of contracting company
- Name of construction project
- Location of project
- Project summary: A description of the work to be accomplished (e.g., this project entails the excavation of previously identified and sampled soil that is contaminated with xyz chemical, etc.)
- Statement of company's safety goals and objectives
- Crew composition: Identify crew composition, including the safety manager and all competent persons who are designated to carry out the required operations (by name and the specific operation they are qualified to oversee)
- Name of subcontracting companies and the operation(s) that they will perform (e.g., Abacus Corporation will be the subcontractor to Barnabas Company and will perform the removal, loading, and transportation or disposal of all encountered contaminated soil)
- Employee training: Describe what the training requirements are and how they are to be met
- Identification of PPE to be used (See Hazard Analysis discussion)

## **HAZARD ANALYSIS**

For each planned or required operation, describe the hazards associated with these operations, the hazard abatement processes to be employed, and how personnel will be protected from these hazards. For example, a certain project requires the excavation, loading, removal, and disposal of contaminated soil. Employees will be provided proper personal protective equipment (PPE), including safety hats, steel-toe shoes, safety glasses, goggles, gloves, etc. Proper protective systems will be used in trenches to prevent collapse. Ground moving equipment will be operated by properly trained or certified persons. Traffic control operators will be provided to direct trucks to and from the disposal site, and so on.

## **STANDARD OPERATING PROCEDURES**

Standard operating procedures: Discuss what they are and how they will be employed in this project. Examples include first aid procedures, accident response procedures, fire safety and response procedures, etc. Standard operating procedures may cover but not be limited to the following:

- Operations involving asbestos, lead, and mercury
- Barricade system(s)
- Concrete and masonry work
- Work in confined space(s)

- Operating cranes and other heavy equipment
- Demolition planning and waste removal
- Emergency preparedness plan (EPP) and emergency procedures
- Flammable liquids, quantities, and protective systems
- Hazard communication information
- Hot-work
- Ladder safety
- Lockout and tagout procedures
- Power tool program
- Pressurized systems control plan
- Respiratory systems
- Rigging
- Roofing
- Scaffolding
- Toxic or hazardous materials and waste
- Traffic control planning
- Trenching

The above information is intended to serve only as a guide. Specific HASP's may vary based on the nature of the construction project and the operations required. If additional guidance is required, please contact the cognizant NASA Glenn contracting officer's representative (COR) or the NASA GSO.

## **APPENDIX C - GSO Site-Specific Health and Safety Plan Template**

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